

## 21 TIS

### 21A Pure compound

#### No. 21A-1 TIS, Thallium monosulfide

( $M = 236.449$ )

1a	Ferroelectricity in monoclinic TIS *) was reported by Kashida et al. in 1992.			92Kas 93Nak
b	phase	III	II	I
	state	F		P
	crystal system	monoclinic		
	space group	$C2-C_2^3$		
	$\Theta$ [K]	318.6	341.1	
*) TIS has three polymorphs: (1) tetragonal type, (2) tetragonal layer type, and (3) monoclinic layer type.				
2a	Single crystal preparation: zone levelling technique with enriched S. See also			92Kas 71Ito
b	Crystal is very fragile.			92Kas
3a	Unit cell parameters: $a = 11.018(6)$ Å, $b = 11.039(15)$ Å, $c = 60.16(7)$ Å, $\beta = 100.69(4)^\circ$ . Bragg reflections can be classified into main reflections and weak satellite reflections, and the unit cell can be regarded as composed of 4 subcells of average structure with lattice constants $a$ , $b$ , $c/4$ and $\beta$ .			93Nak 93Nak
b	$Z = 128$ . Crystal structure of phase III: Table 21A-1-001; Fig. 21A-1-001, Fig. 21A-1-002.			93Nak
5a	Dielectric constant: Fig. 21A-1-003. Curie-Weiss law in phase I: $C \cong 500$ K, $\Theta_p = 289.6$ K.			92Kas
c	Spontaneous polarization and coercive field at RT: see			92Kas
6a	Differential scanning calorimetry: Fig. 21A-1-004.			
11	Electrical conductivity is relatively high. Resistivity: see			92Kas 71Ito